

Application No. 10/006,373
Response to Office Action

Customer No. 01933

R E M A R K S

Reconsideration of this application is respectfully requested.

Claims 12, 13, 15, 16, 18, 20, 21, 23, 24 and 26 were rejected under 35 USC 103 as being obvious in view of the combination of USP 6,167,173 (previously cited "Schoeppe et al") and USP 5,029,245 (newly cited "Keränen et al"); and claims 10, 11, 14, 17, 19, 22, 25 and 27 were rejected under 35 USC 103 as being obvious in view of the combination of Schoeppe et al and Keränen et al with one of USP 4,449,821 (newly cited "Lee") and USP 5,684,582 (previously cited "Eastman et al"). These rejections, however, are respectfully traversed.

The claimed present invention is directed to simultaneously stabilizing the outputs of a plurality of emission wavelengths irradiating a sample. To achieve this, the light outputs of each of the plurality of emission wavelengths irradiated to a sample are detected simultaneously, and the outputs are controlled for each wavelength so that the light puts are stabilized in each wavelength.

More specifically, according to the present invention as recited in independent claims 10, 12 and 21, a laser microscope is provided which irradiates a sample with a laser light including lines of different emission wavelengths through an objective lens, and which detects a fluorescent light emitted

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from the sample. As recited in independent claims 10, 12 and 21, a spectral resolution section spectrally resolves the laser light into the lines of different emission wavelengths, and a light receiving element array is configured to simultaneously receive the lines of different emission wavelengths. And as recited in independent claims 10, 12 and 21, a controller is configured to receive an output signal of the light receiving element array and to control respective intensities of the lines of different emission wavelengths included in the laser light to be constant.

Thus, as explained in the Amendment under 37 CFR 1.116 filed on November 26, 2003, with the laser microscope of the claimed present invention, the sample is irradiated with laser light including lines of different emission wavelengths (i.e. laser light including plural spectral lines), and fluorescent light of different wavelengths emitted from the sample is detected. The lines of different emission wavelengths are simultaneously received by the light receiving element array (i.e., a line sensor), and respective intensities of the lines of different emission wavelength are controlled to be constant.

The Examiner acknowledges on page 3 of the Office Action that Schoeppe et al does not disclose a spectral resolution section for spectrally resolving the laser light into the lines of different emission wavelengths, or a light receiving element array that is configured to simultaneously receive the lines of

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different emission wavelengths. For this reason, the Examiner has cited Keränen et al to supply the missing teachings of Schoeppe et al. It is respectfully submitted, however, that Keränen et al also does not at all disclose, teach or suggest the above described features of the claimed present invention.

According to Keränen et al, one LED element 21 is activated, and the radiation from the LED 21 is collected by lens 3 and separated into a spectrum by grating 4. The spectrum is then irradiated onto a stop 5, such that only a desired wavelength range ($\Delta\lambda_1$) passes through the slit 6. And the detector 7 detects the intensity of only the wavelength range $\Delta\lambda_1$ that passes through the slit 6. The intensity of the radiation in the wavelength range $\Delta\lambda_1$ is adjusted to a desired level. Then, the detection and control process is repeated for a second LED 22, corresponding to a second wavelength range $\Delta\lambda_2$. Thus, according to Keränen et al, the intensity in each wavelength range $\Delta\lambda_1 \dots \Delta\lambda_n$ is respectively measured and controlled. And according to Keränen et al the detector 7 measures only a desired wavelength range of the spectrum from the grating 4.

That is, Keränen et al is directed to a spectrometer, in which a beam of light having one narrow wavelength band is irradiated to a sample. And it is respectfully submitted that Keränen et al therefore merely discloses detecting the intensity

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of a narrow wavelength range of a spectrum reflected by a reflection grating.

Accordingly, it is respectfully submitted that Keränen et al clearly does not disclose, teach or suggest the features of the claimed present invention whereby a spectral resolution section spectrally resolves the laser light into the lines of different emission wavelengths, and a light receiving element array is configured to simultaneously receive the lines of different emission wavelengths.

According to the present invention, for example, an argon laser 31 and two helium neon lasers 32 and 33 emit laser lights corresponding to wavelengths of 488nm, 515.5nm, 457.9nm, 543nm and 633nm. The wavelengths are combined in one laser, and an AOTF 25 selects an arbitrary combination of the wavelengths from the combined laser for emission to a sample. The laser light emitted toward the sample is spectrally resolved into the respective lines of wavelengths 488nm, 515.5nm, 457.9nm, 543nm and 633nm by, for example a prism, and a CCD line sensor detects all of the lines. The intensities of the respective lines are controlled based on the output of the CCD line sensor. (See pages 18-20 of the specification.)

That is, according to the claimed present invention, a beam with a plurality of different lines of wavelengths is irradiated to a sample, the plurality of lines of the different wavelengths

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are resolved by the spectral resolution section, and the resolved wavelengths are all detected by a light receiving element array.

It is respectfully submitted, therefore, that the light receiving element array of the claimed present invention clearly does not correspond to the detector 7 of Keränen et al, which detects only a narrow wavelength range of the spectrum from grating 4 (i.e. the narrow range passed by slit 6).

With respect to independent claim 12, moreover, it is respectfully pointed out that claim 12 recites that the light receiving element array includes a plurality of light receiving elements configured to simultaneously receive the lines of different emission wavelengths such that each emission wavelength of said spectrally-resolved laser light is respectively received by one of said light receiving elements. It is respectfully submitted that the Examiner has not pointed to any feature in Keränen et al as corresponding to this feature of the present invention. And it is respectfully submitted that Keränen et al does not in fact disclose, teach or suggest this feature recited in independent claim 12.

In view of the foregoing, it is respectfully submitted that even if Keränen et al were combinable with Schoeppe et al in the manner suggested by the Examiner, the structural features of the claimed present invention as recited in independent claims 10, 12 and 22 would still not be achieved or rendered obvious.

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Accordingly, it is respectfully submitted that independent claims 10, 12 and 21, as well as claims 11, 13-20 and 22-27 respectively depending therefrom, all patentably distinguish over Schoeppe et al and Keränen et al, taken together or in any combination with Lee and Eastman et al, under 35 USC 103.

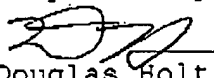
RE: OFFICE ACTION SUMMARY SHEET

The Office Action Summary Sheet and page 2 of the Office Action indicate that claims 11-27 are currently pending in the application. It is respectfully pointed out, however, that in fact claims 10-27 are currently pending in the application and it is respectfully requested that the record be corrected to reflect that claims 10-27 are currently pending.

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If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned for prompt action.

Respectfully submitted,


Douglas Holtz
Reg. No. 33,902

Frishauf, Holtz, Goodman & Chick, P.C.
767 Third Avenue - 25th Floor
New York, New York 10017-2023
Tel. No. (212) 319-4900
DH:iv
encs.